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# PERBEDAAN SIKAP TERHADAP PENERAPAN PROTOKOL KESEHATAN COVID-19 PADA PASIEN TIPE 2 DAN NON DIABETES MELLITUS

*Different Attitudes Regarding The Implementation Of The Covid-19 Health Protocol In Type 2 And Non-Diabetes Mellitus Patients.*

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***ABSTRACT***

*Background: Patients with diabetes mellitus (DM) have a poor prognosis if infected with Coronavirus Disease 2019 (COVID-19). Diabetes is associated with increased severity and mortality of COVID-19 disease. Therefore, it is essential for people with diabetes to implement health protocols not to contact SARS-CoV-2, which causes COVID-19. Objective: The purpose of this study was to determine differences in the behavior of implementing the Covid-19 health protocol in patients with type 2 DM and non-DM. Methods: This research is an observational analytic with a cross-sectional approach involving DM and non-DM patients at the Indramayu Regional General Hospital. The research instrument used was a questionnaire and medical record data. P-value <0.05 means statistically significant. Results: A total of 120 subjects consisting of 60 patients with type 2 DM and 60 non-DM were willing to participate in the study. Fifty-five people (91.7%) type 2 DM patients and 53 people (88.3%) non-DM patients applied the Covid-19 health protocol behavior with good categories. The results of the Mann-Whitney test show that there are differences in the conduct of implementing the Covid-19 health protocol in patients with type 2 diabetes mellitus and non-diabetes Mellitus at Indramayu Hospital (p-value = 0.000). Conclusion: We conclude that type 2 DM patients are more concerned about preventing the transmission of COVID-19 through good behavior in implementing the COVID-19 health protocol.*
***Keywords** : COVID-19,Diabetes Mellitus Tipe-2, Health Protocol,*

**ABSTRAK**

Latar Belakang: Penderita diabetes mellitus (DM) memiliki prognosis yang buruk jika terinfeksi Coronavirus Disease 2019 (COVID-19). Diabetes dikaitkan dengan peningkatan keparahan dan kematian penyakit COVID-19. Oleh karena itu, penting bagi penderita diabetes untuk menerapkan protokol kesehatan agar tidak tertular SARS-CoV-2 penyebab COVID-19. Tujuan: Tujuan penelitian ini adalah untuk mengetahui perbedaan perilaku penerapan protokol kesehatan Covid-19 pada pasien DM tipe 2 dan non DM. Metode: Penelitian ini merupakan penelitian observasional analitik dengan pendekatan cross sectional yang melibatkan pasien DM dan non DM di RSUD Indramayu. Instrumen penelitian yang digunakan adalah angket dan data rekam medis. P-value < 0,05 berarti signifikan secara statistik Hasil: Sebanyak 120 subjek yang terdiri dari 60 pasien DM tipe 2 dan 60 non DM bersedia mengikuti penelitian. Lima puluh lima orang (91,7%) pasien DM tipe 2 dan 53 orang (88,3%) pasien non-DM menerapkan perilaku protokol kesehatan Covid-19 dengan kategori baik. Hasil uji Mann-Whitney menunjukkan terdapat perbedaan pelaksanaan protokol kesehatan Covid-19 pada pasien diabetes mellitus tipe 2 dan non diabetes Mellitus di RSUD Indramayu (p-value = 0,000). Kesimpulan: Kami menyimpulkan bahwa pasien DM tipe 2 lebih peduli untuk mencegah penularan COVID-19 melalui perilaku yang baik dalam menerapkan protokol kesehatan COVID-19.
**Kata kunci** : COVID-19, Diabetes Mellitus Tipe-2, Protokol Kesehatan,

## INTRODUCTION

COVID-19 is a disease caused by the SARS-CoV 2 virus with clinical symptoms: fever, dry cough, fatigue, and shortness of breath (Tubarad *et al.*, 2021). The deaths caused by Covid-19 can be associated with acute respiratory distress syndrome (ARDS) or septic shock. WHO declares that Covid-19 is a global pandemic, and this disease has spread throughout the world and has infected more than 2 million people (Ma and Holt, 2020; Syahniar *et al.*, 2020). The first confirmed cases of Covid-19 in Indonesia were reported on March 2, 2020, as many as two people. As of July 2021, Covid-19 has reached 3 million confirmed cases in Indonesia and ranks 14th in the world out of a total of 19 cases of Covid-19 (Kemenkes, 2021). As of July 2021, more than 4,000,000 people have died from Covid-19 worldwide. Indonesia's Covid-19 Case Fatality Rate (CFR) is 2.58% (Kemenkes, 2021).

One of the most dangerous co-morbidities of Covid-19 is diabetes mellitus (DM). Increased blood glucose levels can destroy the individual's immune system and decrease the ability to fight various types of infections, one of which is COVID-19 (Taye *et al.*, 2020). DM is the second comorbid disease after hypertension as a cause of severity and death for Covid-19 patients



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(Nining and Burhannudin, 2021). The results of research conducted by Guan et al., show that around 7% of Covid-19 patients have diabetes (Guan *et al.*, 2020). The prevalence of diabetes was almost three times higher in Covid-19 patients (16.2%) than in patients without COVID-19 (5.7%) (Zhou *et al.*, 2020).

During a pandemic, people with diabetes need to be more alert and trained to maintain their blood glucose levels to stay healthy and avoid complications (Nining and Burhannudin, 2021). Prevention efforts for diabetic patients are the best step to avoid COVID-19 infection because of its harmful impact on diabetic patients (Putri, Hasyim and Fajar, 2021). Examples of the implementation of the Covid-19 health protocol behavior include the application of 5M (using masks, washing hands, maintaining distance, staying away from crowds, and reducing mobilization)(Ernyasih and Srisantyorini, 2020). A study conducted by Giszka et al., involving six health centers in Indonesia, found that 57.3% of DM patients had a negative attitude towards preventing COVID-19 (Putri, Hasyim and Fajar, 2021). DM disease is included in immunocompromise so that if exposed to or infected with the virus in small amounts, it can cause infection, especially lung infection (Imam, 2020). Therefore, the purpose of this study was to determine differences in the attitude of implementing the COVID-19 Health Protocol in Type 2 DM and Non-DM Patients at the Indramayu Regional General Hospital.

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## METHOD

This research is an observational analytic with a cross-sectional approach conducted in November-December 2021. The research instrument used a questionnaire and medical record data. The population in this study were all patients with type 2 diabetes mellitus and non-diabetes Mellitus at the Internal Medicine Polyclinic, Indramayu Regional General Hospital. A total of 60 patients with type-2 DM and 60 respondents from non-DM patients who met the inclusion and exclusion criteria were included. All patients giving informed consent to participate were included in the study. Samples were taken using a consecutive sampling technique.

Inclusion criteria for the Type 2 DM patient group were outpatients who had a Current Blood Sugar (GDS) ≥ 200 mg/dl and a Fasting Blood Sugar (GDP) ≥ 126 mg/dl. GDS is the result of checking blood glucose levels daily without regard to the time of the last meal (PERKENI, 2020). GDP is the result of checking blood glucose levels in patients who do not receive a minimum of 8 hours of caloric intake (PERKENI, 2020). The exclusion criteria for this study were patients who did not fill out the questionnaire completely and patients with incomplete data and medical record numbers.

The research questionnaire consisted of the characteristics of the respondents and the health protocol as recommended by the ministry of health (attached to the Supplementary Files). Answers to the questionnaire use a Likert scale, which is a score of 1 to 5 (Always = 5, Often = 4, Sometimes = 3, Rarely = 2, Never = 1). The results of the questionnaire answers were categorized into good (score 75%), sufficient (score 56-74%), and less (score 55%). The validity and reliability test of the questionnaire involved 30 respondents. Validity test using Pearson correlation test. The results are declared valid if the value of r count > r table. Reliability test using Cronbach's Alpha method.

Data analysis used the Statistical Package for Social Science version 25. Test the normality of the data using Kolmogrov Smirnov. The data analysis uses an unpaired T-test if the data is normally distributed. On the other hand, if the data is not normally distributed, the data analysis uses the Mann-Whitney test. This research has passed the ethical review of the Health Research Ethics Commission with Number 47/F.7.1-UMJ/X/2021

## RESULT

Of all patients with type-2 DM and non-DM, the number of women (70%) is more than that of men (30%). Age grouping was divided into 17-25 years, 26-35 years, 36-45 years, 46-55 years, and > 56 years. The highest number of ages in patients with type 2 diabetes is 46-55 years (40.0%), while in non-DM patients, the highest age is in the 36-45 year group, which is 26.7%. The educational history category is grouped into 5, namely not graduating, graduating from elementary school, junior high school, senior high school, and university. Of all respondents, most of them fall into high



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school education. The most recent education was in patients with type 2 diabetes, namely junior high school, 22 people (36%). In patients with non-DM, most of the respondents had the last education, namely high school, amounting to 21 people (35%). Of the total respondents, most 39 (32.5%) work as housewives.

A total of 112 (93.3%) respondents who have received information on the COVID-19 health protocol were 55 (91.7%) and 57 (95%). Overall, 35 (29%) had confirmed COVID-19 in DM patients who had guaranteed COVID-19 as many as 16 (26.7%), while in non-DM patients, it was 19 (31.7%).

Overall, most (90%) of respondents implemented the Covid-19 health protocol behavior well based on the questionnaire (Table 4.2). In the type 2 DM and non-DM patients group, most of them also applied the COVID-19 health protocol behavior with a good category as many as 55 people (91.7%) and 53 people (88.3%). In the group of type 2 DM patients, there were no respondents who applied the Covid-19 health protocol behavior in the unfavorable category. In the non-DM group, one respondent applied the Covid-19 health protocol behavior in the poor category.

Before the bivariate analysis test, the normality test was carried out in the type-2 DM and non-DM groups using the Kolmogorov-Smirnov test. The test results get a p-value <0.05 which indicates the data in the two groups are not normally distributed. Based on the normality test results, the following data analysis used non-parametric statistics, namely the Mann-Whitney test. Based on the results of the Mann-Whitney test in table 4.3, it shows a p-value <0.05, which means that there are differences in the implementation of the COVID-19 health protocol behavior in patients with type 2 DM and non-DM.

**DISCUSSION**

Based on table 1, most type 2 DM and non-DM patients are female, namely 42 people (70%). This result is similar to Julvainda et al.,(Julvainda, Wilda and M, 2021) that female respondents (83.7%) had more comorbidities than males (16.3%). Another study conducted by Yance et al. showed that the female gender (57.6%) in type 2 DM patients were most commonly found in women compared to men, namely 42.4% (Yance and Jeanny, 2021). Women have a risk of developing diabetes mellitus because the Body Mass Index (BMI) in women is more significant than in men and menstrual cycle syndrome and the occurrence of fat accumulation so that glucose uptake into cells is inhibited due to hormonal processes that occur (Sukmaningsih, 2016).

The majority of the group with type 2 DM was 46-55 years old, namely 24 people (40%), while most non-diabetic patients were 36-45 years old, namely 16 people (26.7%). This is in line with research by Mujiburrahman et al., from 104 respondents, 34 people (32.7%) had type 2 diabetes mellitus aged 45-55 years (Riyadi, Eko and Ningsih, 2020). Another study conducted by Irvan Fathurohman showed that diabetic patients aged >45 years as many as 81 people (64.3%) (Irvan and Maritha, 2016). Age is closely related to the increase in blood sugar. The higher the age, the higher the risk for type 2 DM. The aging process can cause changes in the anatomical, physiological and biochemical systems resulting in diabetes mellitus insulin resistance (Bare, Susan and Smeltzer, 2014).

Based on the type of work, most people with type 2 diabetes mellitus and work as homemakers are 19 people (31.7%). This is in line with research conducted by Irvan et al., 3,445 people (26.4%) who worked as housewives (Irvan and Maritha, 2016). We also included a minimum of 30 minutes of physical activity a day to maintain endurance in the questionnaire. Low physical activity causes a person's risk of suffering from diabetes mellitus to be more remarkable because the need for insulin is quiet so that glucose levels increase (Siregar, 2017). This is what causes the increase in the incidence of diabetes mellitus.

In patients with type 2 DM who received information about the behavior of implementing the Covid-19 health protocol, 55 people (91.7%) and non- DM were 57 people (95%). This result is in line with the research conducted by Susi et al.,(Susi and Sri, 2021) that patients with comorbid diabetes mellitus received more information about the Covid-19 health protocol as many as 22 people (71%). Information on the


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Covid-19 health protocol can be accessed through television, newspapers, and the internet (Susi and Sri, 2021).

Many factors influence efforts to improve one's health. These factors can be a basis in determining the strategy for providing health education in the form of behavior in implementing the COVID-19 health protocol. In the end, they will believe and realize the importance of maintaining health.

The community has an essential role in breaking the chain of transmission of Covid-19 not to cause new transmission sources. Given the transmission mode of Covid-19, namely through droplet infection from individual to individual, transmission can occur both at home, traveling, at work, places of worship, tourist attractions, and other public places so that people are required to implement the behavior of the Covid-19 health protocol. Diabetes mellitus is the second comorbid after lung disease, worsening when infected with the SARS-CoV-2 (WHO, 2020)**.** The results showed that type 2 DM patients had better attitude in implementing the COVID-19 health protocol, which was 91.7% compared to non-DM patients that are 88.3%. These results indicate that people with type 2 diabetes mellitus are more concerned about implementing the Covid-19 health protocol than non-diabetic patients. Preventive behavior is the best effort to control and prevent COVID-19 because there is no considered adequate treatment for COVID-19 and its adverse effects on diabetic patients. Research comparing COVID-19 prevention attitudes to diabetic and non-diabetic patients has not been widely carried out, especially in Indonesia.

The unfavorable attitude of diabetic patients towards COVID-19 can endanger diabetic patients with a higher risk, so they must be more aware of the transmission and prevention of COVID-19. A study conducted by Gizska et al. found that 57.3% of diabetic patients had a bad attitude towards implementing the COVID-19 health protocol (Putri, Hasyim and Fajar, 2021). According to expert recommendations, more diabetes patients are not performing well and according to preventive behavior. This issue has similarities with research conducted in Sudan (Mohamed *et al.*, 2021). Research on the knowledge, awareness, and behavior of diabetic patients in Pakistan shows that diabetic patients do not perform optimally in preventive behavior and do not comply with COVID-19 preventive measures (Ajay *et al.*, 2020). Most patients with chronic diseases have a low perception of and willingness to apply COVID-19 health protocols (Putri, Hasyim and Fajar, 2021).

The results of the Mann-Whitney test show that the p-value is <0.05, which means that there is a difference between the behavior of implementing the Covid-19 health protocol in type 2 DM patients and non-DM patients—according to Ayu et al., stating that knowledge and attitudes are related to the behavior of implementing the Covid-19 health protocol where the better the knowledge and attitude of a person, the better the behavior of implementing the Covid-19 health protocol in the transmission of the coronavirus (Ayu, Budiyono and Nikie, 2020). Nining et al.'s research reinforce that a good attitude could affect implementing health protocols in preventing the transmission of Covid-19. The results of this study indicate that people who have comorbidities such as type 2 diabetes mellitus and those who do not have comorbidities have begun to understand and understand the prevention of Covid-19. One form of prevention of COVID-19 is by implementing the Covid-19 health protocol (Nining and Burhannudin, 2021). One form of prevention of COVID-19 is by implementing the Covid-19 health protocol The Indonesian Ministry of Health issued decision No. HK.01.07/MENKES/382/2020 regarding the health protocol for the community in the context of preventing and controlling COVID-19 (RI, 2020). One form of prevention of COVID-19 is by implementing the Covid-19 health protocol 4. The Indonesian Ministry of Health issued decision No. HK.01.07/MENKES/382/2020 regarding the health protocol for the community in the context of preventing and controlling COVID-19. One of the protocols contains individual health protection, including personal protective equipment, washing hands, avoiding touching the eyes, nose, and mouth with unclean hands, maintaining a minimum distance of 1 meter, and increasing body resistance by implementing a Clean and Healthy Lifestyle. PHBS). The Indonesian Ministry of Health has also issued guidelines for preventing and controlling COVID-19. In


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these guidelines, there are recommendations for DM patients to continue to take antihyperglycemic drugs to keep blood sugar levels from increasing and maintain a healthy diet and maintain normal body conditions (Kemenkes, 2020). In addition, DM patients are encouraged to control blood sugar levels independently by using a glucometer (Kemenkes, 2020). Because DM is a comorbid condition that exacerbates COVID-19, then DM sufferers should be more concerned and understand the COVID-19 health protocol.

## CONCLUSION

The results of this study indicate that overall, type 2 DM and Non-DM patients apply the COVID-19 health protocol well. In the type 2 DM patient group, the implementation of the COVID-19 health protocol was better than in the Non-DM patient group. There are differences in applying the COVID-19 health protocol in the type 2 DM and Non-DM groups. The public needs to implement the COVID-19 health protocol to avoid the transmission of the SARS-CoV-2. Patients with comorbid diabetes mellitus can control their blood sugar to remain normal, maintain health, and always apply the COVID-19 health protocol.

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Table 01
Characteristics of Research Subjects

| Characteristics of Respondents | DM | | NON-DM | | Total |
|---|---|---|---|---|---|
| | N | % | N | % | N (%) |
| Gender | | | | | |
| ➢ Male | 18 | 30 | 18 | 30 | 36 (30) |
| ➢ Female | 42 | 70 | 42 | 70 | 84 (70) |
| Age (Year) | | | | | |
| ➢ 17-25 | 4 | 6.7 | 6 | 10 | 10 (8.3) |
| ➢ 26-35 | 5 | 8.3 | 13 | 21.7 | 18 (15) |
| ➢ 36-45 | 14 | 23.3 | 16 | 26.7 | 30 (25) |
| ➢ 46-55 | 24 | 40 | 14 | 23.3 | 38 (31.7) |
| ➢ >56 | 13 | 21.7 | 11 | 18.3 | 24 (20) |
| Educational Stage | | | | | |
| ➢ Not completed in primary school | 2 | 3.3 | 0 | 0 | 2 (2) |
| ➢ Primary School | 9 | 15.0 | 10 | 16.7 | 19 (16) |
| ➢ Junior High School | 22 | 36.7 | 17 | 28.3 | 39 (33) |
| ➢ Senior High School | 19 | 31.7 | 21 | 35 | 40 (33) |
| ➢ Bachelors | 8 | 13.3 | 12 | 20 | 20 (17) |
| Employement | | | | | |
| ➢ Unemployment | 2 | 3.3 | 5 | 8.3 | 7 (5.8) |
| ➢ Government employees | 3 | 5 | 6 | 10 | 9 (7.5) |
| ➢ Housewife | 20 | 33.3 | 19 | 31.7 | 39 (32.5) |
| ➢ Entrepreneur | 1 | 1.7 | 5 | 8.3 | 6 (5) |
| ➢ Private employee | 12 | 20 | 13 | 21.7 | 25 (20.8) |
| ➢ Other | 22 | 36.7 | 12 | 20 | 34 (28.3) |
| Getting information on Covid-19 health protocols | | | | | |
| ➢ Yes | 55 | 91.7 | 57 | 95 | 112 (93.3) |
| ➢ No | 5 | 8.3 | 3 | 5 | 8 (6.7) |
| Confirmed Covid-19 | | | | | |
| ➢ Yes | 16 | 26.7 | 19 | 31.7 | 35 (29) |
| ➢ No | 44 | 73.3 | 41 | 68.3 | 85 (71) |


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Table 02
Distribution of Attitudes regarding the Implementation of the Covid-19 Health Protocol in Type 2 DM and Non-DM Patients

| **Attitudes regarding the Implementation of the COVID-19 Health Protocol** | **Respondent** | | | | |
|---|---|---|---|---|---|
| | **DM Tipe 2** | | **Non-DM** | | **Total** |
| | **n** | **%** | **n** | **%** | **n (%)** |
| Good | 55 | 91.7% | 53 | 88.3% | 108 (90) |
| Sufficient | 5 | 8.3% | 6 | 10.0% | 11 (9.2) |
| Poor | 0 | 0% | 1 | 1.7% | 1 (0.8) |
| Total | 60 | 100% | 60 | 100% | 120 (100) |

Table 03
Comparison of Behavioral Implementation of Health Protocols in Patients with Type 2 Diabetes Mellitus and Non-Diabetes Mellitus

| **Respondent** | **N** | **Mean** | **Standard Deviation** | **p-value** |
|---|---|---|---|---|
| **DM Tipe 2** | 60 | 76.38 | 12.559 | 0.000 |
| **NON-DM** | 60 | 44.62 | 10.511 | |


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